

Listing of Claims

1. (Currently Amended) A control apparatus for relay node duplexing, comprising:

a duplexing control unit which maintains for preventing the loss of a message
~~during an exchange time period by keeping only~~ a message transmission function ~~in case and~~
~~disables a message receiving function of an active node and activating only activates~~ a message
receiving function ~~in case~~ of a standby node during a duplex exchange operation, when a node
~~relaying a message by buffering is required to be exchanged, and obtaining which transfers~~ an
active right signal to ~~at~~ the standby node when the duplex exchange operation is completed.

2. (Currently Amended) The apparatus of claim 1 wherein the duplexing control unit
comprises:

an active signal generation unit for generating the active right signal determining
~~the active right of the node;~~

an exchange reporting unit for informing the standby node ~~that it has~~ to prepare
for a duplex exchange, when duplex exchange is requested, and controlling the active node not
to receive a message any more;

an exchange complete detection unit for detecting [[the]] a message storing state of
[[the]] a TX buffer and an RX buffer of the active node when the preparation for the duplex
exchange is reported, and controlling the completion of the exchange according to the a result of
the detection;

an exchange determination unit for determining the completion of the exchange according to the control of the exchange completion of the exchange complete detection unit and outputting ~~the a~~ result of the determination to the active signal generation unit;

an exchange preparation unit for preparing for the exchange by controlling the message receiving of the standby node when the exchange preparation is reported from the active node; and

an operation control unit for controlling the operation of the message receiving of the standby node according to the control of the exchange reporting unit and exchange preparation unit.

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3. (Currently Amended) The apparatus method of claim 1 2, wherein a buffer of the active node is emptied of messages when the message transmission function is maintained, and a buffer of the standby node receives a new message when the message receiving function is maintained. ~~the active signal generation unit makes its node obtain the active right if the opposite node is not in the active state.~~

4. (Currently Amended) The apparatus method of claim 2, wherein the exchange reporting unit controls the operation control unit so that the message transmission/receiving function of the active node is inactivated disabled when the active signal generation unit generates the active right a signal for giving up the active right of transfer to the standby node.

5. (Currently Amended) The apparatus method of claim 2, wherein the exchange reporting unit controls the operation control unit so that ~~the a~~ message transmission/~~receiving~~ function of the standby node is activated, when the active signal generation unit generates ~~a the~~ active right signal for transfer to obtaining the active right of the standby node.

6. (Currently Amended) The apparatus method of claim 2, wherein the operation control unit disables the message transmission function of the active node according to the control of the message transmission inactivation by ~~means of~~ the exchange reporting unit, ~~in case of the active node,~~ and enables the message receiving function of the standby node according to the control of the message receiving activation ~~by means~~ of the exchange preparation unit, ~~in case of the standby node.~~

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7. (Currently Amended) The apparatus method of claim 1, wherein, if the duplex exchange operation is performed in response to request is a power fail signal, the active node is supplied with a stable voltage for a predetermined time by the power supply even after the occurrence of power down.

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8. (Currently Amended) The apparatus method of claim 7, wherein the predetermined time is longer than the a time period between the power down and the generation of the a duplex exchange complete signal.

9. (Currently Amended) The apparatus method of claim 7, wherein the power supply ~~can~~ supplies supply power to the active node for ~~a~~ the predetermined time even after the power down, ~~because it has the function of as a result of~~ a voltage charging function.

10. (Currently Amended) The apparatus method of claim 1, wherein the message comprises a HDCL frame and an ethernet frame.

11. (Currently Amended) A control method for relay node duplexing, comprising:
~~a first step of generating [[a]] an exchange start signal when for at least one of an active node and a standby node for relaying a message using a buffer is required to be when a duplex[[-]]exchanged operation is to be performed;~~
~~a second step of performing [[the]] preparation for exchange at between the active node and the standby node, respectively, when the exchange start signal is generated;~~
~~a third step of generating [[a]] an exchange complete signal and becoming setting the active node to an inactive state, when the preparation for exchange is completed at the active node; and~~
~~a fourth step of activating the standby node when the receiving the exchange complete signal is activated to the active state received by the standby node.~~

12. (Currently Amended) The method of claim 11, wherein ~~the second step preparation performing~~ comprises ~~the steps of~~:

stopping [[the]] ~~a~~ message receiving function and keeping [[the]] ~~a~~ message transmission function at the active node, when [[an]] ~~the~~ exchange start signal is generated, ~~for thereby~~;

transmitting ~~the~~ ~~a~~ message already stored in ~~the~~ ~~a~~ buffer of the active node before start of the duplex exchange; and

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activating ~~the~~ ~~a~~ message receiving function at the standby node after having received the exchange start signal is received; and for thereby

receiving a message inputted from the outside for storage in a buffer of the standby node during the duplex exchange operation.

13. (Currently Amended) The method of claim 11, wherein ~~the third step generating the exchange complete signal~~ comprises ~~the steps of~~:

detecting [[the]] ~~a~~ state of ~~a~~ the buffer at the active node; and
generating [[an]] ~~the~~ exchange complete signal, if the buffer is determined to be empty as [[the]] ~~a~~ result of the detected state detection and inactivating the active node.

14. (Currently Amended) The method of claim 11, wherein ~~the fourth step is characterized in that~~ the standby node having received the exchange complete signal becomes

active by activating ~~the~~ a message transmission/receiving function for thereby completing the exchange.

15. (Original) The method of claim 11, wherein the message comprises a HDCL frame and an ethernet frame.

16. (Currently Amended) The method of claim 11, wherein the active node is supplied with a stable power for a predetermined time ~~even after the occurrence of the~~ power down, if the duplex exchange request operation is performed in response to a power fail signal.

17. (Currently Amended) The method of claim 16, wherein the predetermined time is longer than [[the]] a time period between the power down and [[the]] generation of the exchange complete signal.

18. (New) An apparatus, comprising:

- a detection unit which detects a status signal; and
- a control unit which maintains a message transmission function and disables a message receiving function of an active node and which activates a message receiving function of a standby node during a duplex exchange operation initiated in response to the status signal.

19. (New) The apparatus of claim 18, wherein the status signal indicates occurrence of a power failure of the active node.

20. (New) The apparatus of claim 18, wherein at least one message buffer of the active node is emptied during a period when the message transmission function is maintained.

21. (New) The apparatus of claim 20, wherein all messages stored in the buffer are transmitted to at least a second buffer.

22. (New) The apparatus of claim 21, wherein the second buffer is located at the standby node.

23. (New) The apparatus of claim 18, wherein the active node includes:
an interface coupled to a signal line; and
a message buffer coupled to the interface, wherein disabling the message receiving function includes disabling a message receiving capability of the interface, and wherein at least one message stored in the buffer is sent to the signal line through the interface while the message transmitting function is maintained.

24. (New) The apparatus of claim 23, wherein all messages stored in the buffer are sent to the signal line through the interface while the message transmitting function is maintained.

25. (New) The apparatus of claim 23, wherein the signal line is coupled to a message buffer in the standby node.

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26. (New) A control method, comprising:

initiating a duplex exchange operation between active and standby nodes;

disabling a message receiving function and maintaining a message transmitting

function of an active node;

emptying at least one message buffer of the active node; and

sending an active right signal to the standby node after the buffer is empty.

27. (New) The method of claim 26, wherein the duplex exchange operation is initiated in response to a status signal of the active node.

28. (New) The method of claim 27, wherein the status signal indicates occurrence of a power failure of the active node.

29. (New) The method of claim 26, wherein emptying the at least one message buffer includes transmitting all messages stored in the buffer to at least a second buffer.

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30. (New) The method of claim 29, wherein the second buffer is located at the standby node.

31. (New) The method of claim 26, further comprising:
activating a message receiving function of the standby node; and
transmitting at least one message stored in the message buffer to the standby node.